COUNTY COUNCIL OF THE PARTS OF HOLLAND, LINCOLNSHIRE.

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH.

1914.

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COUNTY COUNCIL OF THE PARTS OF HOLLAND, LINCOLNSHIRE.

TO THE CHAIRMAN AND MEMBERS OF THE PUBLIC HEALTH AND HOUSING COMMITTEE.

Gentlemen,—

Herewith I present my fourth annual report on the health of the County, for the year ending 31st December, 1914.

Owing to the conditions prevailing in this country at the present time, the completion of large schemes for the improvement of the public health is of necessity postponed, and any reforms advocated in this report either involve no great expense or have become more urgent owing to the altered circumstances of the times.

The report is not so favourable as that of the previous year. Infectious disease was more prevalent, and a somewhat extensive epidemic of Scarlet Fever broke out in Boston during the autumn. The failure of the Boston water supply during the latter months of the year was also unfavourable to the maintenance of sanitary conditions in the town.

Improvements in water supply and in housing facilities have been especially marked in the Spalding Rural District during the year.

Dr. S. S. Rendall was appointed Medical Officer of Health for the Boston Rural District, in June, in succession to Dr. A. Tuxford who resigned. Dr. G. Cooper took over, temporarily, the duties of Dr. W. A. Wilson Smith, in Long Sutton, on the latter joining the Royal Army Medical Corps in August.

CONTENTS.

VITAL STATISTICS.

AREA AND POPULATION.—The following information with regard to the area, number of inhabited houses and population of each district in the Parts of Holland is derived from the Report on the Census taken on the 3rd April, 1911 :—

District.	Area in Acres (Land and Inland Water) 1911	Families or Separate Occupiers, 1911	Population. Census 1901	Population. Census 1911	Population. Increase during decennium 1901-1911	Average No. of Persons per 100 acres 1911	Average No. of Persons per house 1911.
URBAN :							
Boston Borough ..	2,727	4,049	15,667	16,673	1,006	611	4.1
Spalding	10,747	2,534	9,385	10,308	923	96	4.1
Holbeach	22,666	1,204	4,755	5,259	504	23	4.4
Long Sutton	3,931	678	2,524	2,837	313	72	4.2
Sutton Bridge	6,176	517	2,105	2,156	51	35	4.2
RURAL :							
Boston	85,020	5,043	19,802	21,057	1,255	25	4.2
Spalding	71,398	3,030	12,397	13,186	789	18	4.4
East Elloe	52,877	1,962	8,228	8,690	462	16	4 4
Crowland	13,450	676	2,747	2,683	—64 (decrease)	20	4.0
Parts of Holland ..	268,992	19,693	77,610	82,849	5,239	31	4.2

Of the total area of 268,992 acres, 46,247 acres are included in the Urban Districts (though the greater part of this land is purely rural in character) and 222,745 acres in the Rural Districts.

The population of each district in the County has been estimated to the middle of the year 1914, for the use of the Medical Officers of Health in preparing their reports, by means of the factor recommended for use by the Registrar-General. The total population of the Administrative County, thus estimated, is 84,672, the population of the Urban Districts being estimated at 38,206, and of the Rural Districts at 46,466.

This method of estimating populations is based on the rate of growth of the population during the ten years preceding the last census, and the estimates thus made are obviously liable to error which will yearly tend to become greater as the date of the next census approaches.

VITAL STATISTICS, 1914.

District.	Population estimated to the middle of 1914.	Total Births.	Nett Births.		Total Deaths.		Transferable Deaths.		Nett Deaths.		Nett Death Rate corrected for age and sex.	Infant Mortality.			
			No.	Rate per 1000 of estimated population.	No.	Rate per 1000 of estimated population.	Non-residents registered in district.	Residents not registered in district.	No.	Rate per 1000 of estimated population.		Nett deaths under 1 year of age.	Rate per 1000 of Nett Births.	Illegitimate Infants.	
														No. of Births.	No. of Deaths
URBAN:															
Boston	17,023	393	391	**23.0**	295	17.3	40	11	266	**15.6**	13.5	57	**146**	26	8
Spalding	10,629	235	234	**22.0**	168	15.8	20	6	154	**14.4**	12.1	20	**85**	—	—
Holbeach	5,434	143	146	**26.9**	66	12.1	9	8	65	**12.0**	10.2	13	**89**	10	3
Long Sutton ..	2,946	70	73	**24.8**	37	12.6	—	14	51	**17.3**	13.7	8	**110**	3	1
Sutton Bridge	2,174	55	56	**25.8**	22	10.1	—	4	26	**11.9**	9.4	4	**71**	3	1
RURAL:															
Boston	21,494	536	540	**25.1**	256	11.9	7	37	286	**13.3**	10.9	33	**61**	28	2
Spalding	13,460	335	336	**25.0**	144	10.7	—	18	162	**12.0**	10.1	27	**80**	10	?
East Elloe	8,851	232	225	**25.4**	99	11.2	8	13	104	**11.7**	9.3	23	**102**	5	—
Crowland	2,661	68	68	**25.5**	36	13.5	—	4	40	**15.0**	11.8	3	**44**	1	—
Parts of Holland	84,672	2067	2069	**24.4**	1123	13.3	84	115	1154	**13.6**	11.3	188	**91**	86	15
England and Wales (provisional figures)				**23.6**						**13.9**	13.6		**105**		
Do., less 242 large towns. ..				**21.9**						**13.3**	12.2		**93**		

The excess of births over deaths during the period between the date of the last census and the middle of the year 1914 may be taken as approximately 2,932, giving a total population, at the latter date, of 85,781, or about 1,100 more than the estimated population. The yearly natural excess of births over deaths is about 900, whereas the resident population has been estimated to grow only at the rate of about 550 a year. The yearly difference of 350 is considerable for a County area of this size, and must be accounted for by other causes of loss of population, such as migration to other parts of the country or to the Colonies.

BIRTH RATE.—The nett births during the year numbered 2069, giving a birth-rate of 24.4 per 1000 of the population, as against a rate of 23.6 for England and Wales during the same period. The County rate shows an increase of .4 per 1000 over that of the previous year. The highest rate (26.9) was in Holbeach Urban District, and the lowest (22.0) in the Spalding Urban District. The rates for all the rural districts were 25.0 or more.

DEATH RATES.—The nett deaths, after transfer of all deaths to the usual district of residence, numbered 1154, giving a death-rate of 13.6, as against 13.9 for England and Wales. There is an increase of .3 per 1000 over the corresponding County rate for the previous year. The highest rate (17.3) was in the Long Sutton Urban District, and the lowest (11.7) in the East Elloe Rural and (11.9) in the Sutton Bridge Urban Districts. With one exception the rates for the Long Sutton Urban District have been consistently high during the last 4 years, being 18.7 in 1911, 16.0 in 1912, 11.0 in 1913, and 17.3 in 1914.

The table of Causes of Death shows that 16.3 per cent. of the total deaths took place during the first year of life, whilst nearly one-half (45.7 per cent.) were of persons aged 65 and over. The large proportion of 17 per cent. of the deaths in Spalding were from ill-defined or unknown causes.

CAUSES OF DEATH AT EACH AGE-PERIOD AND IN EACH DISTRICT.

Causes of Death.	Under 1 year.	1 and under 2.	2 and under 5.	5 and under 15.	15 and under 25.	25 and under 45.	45 and under 65.	65 and upwards.	All Ages.	Urban Districts.					Rural Districts.				Total Deaths in Institutions in the County.
										Boston.	Spalding.	Holbeach.	Long Sutton.	Sutton Bridge.	Boston.	Spalding.	East Elloe.	Crowland.	
Enteric Fever	..	..	..	..	1	..	4	..	5	3	..	..	..	..	2	..	..	..	1
Small-pox	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..	..
Measles	1	2	1	..	..	..	..	..	4	..	1	..	..	..	2	1	..	..	..
Scarlet Fever	1	1	3	3	..	2	..	..	10	7	..	..	..	..	2	1	..	..	1
Whooping Cough	10	1	..	..	..	..	..	..	11	3	2	..	1	..	1	3	..	1	..
Diphtheria and Croup	1	1	7	5	..	..	1	..	15	6	..	..	1	..	7	..	1	..	4
Influenza	1	..	..	..	..	1	2	5	9	2	..	..	..	..	2	1	2	2	1
Erysipelas	1	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..
Phthisis (Pulmonary Tuberculosis)	..	..	..	1	11	28	10	3	53	14	5	3	3	1	11	13	3	..	6
Tuberculous Meningitis	2	1	3	3	1	..	..	..	10	2	1	..	..	..	5	2	..	..	..
Other Tuberculous Diseases	2	..	..	2	4	2	2	..	12	2	..	2	..	..	5	1	1	1	1
Cancer, malignant disease	..	..	..	1	1	9	43	49	103	18	17	7	8	1	20	17	11	4	15
Rheumatic Fever	..	..	..	..	1	1	..	2	4	1	..	..	..	..	2	..	1	..	..
Meningitis	1	..	..	2	1	..	..	..	4	2	..	..	..	..	1	..	1	..	..
Organic Heart Disease	..	..	..	..	1	11	33	68	113	18	25	3	1	2	24	25	11	4	13
Bronchitis	19	4	1	1	..	2	10	48	85	24	10	2	5	2	16	17	5	4	7
Pneumonia (all forms)	11	6	1	2	1	8	12	22	63	9	3	5	7	3	20	5	8	3	8
Other diseases of Respiratory Organs	2	1	..	1	..	1	3	6	14	1	1	..	..	..	11	..	..	1	2
Diarrhœa and Enteritis	21	3	..	1	1	..	2	6	34	16	6	1	..	..	8	2	1	..	..
Appendicitis and Typhlitis	..	..	..	3	3	1	2	..	9	2	3	..	..	2	..	..	2	..	2
Cirrhosis of Liver	..	..	..	..	..	1	7	4	12	4	3	..	..	..	2	2	..	1	1
Alcoholism	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	..	1
Nephritis and Bright's Disease	..	..	1	..	..	4	12	26	43	9	3	7	3	2	8	4	5	2	5
Puerperal Fever	..	..	..	..	..	1	..	..	1	1	..	..	..	..	..	..	..	..	1
Other accidents and diseases of Pregnancy and Parturition	..	..	..	..	1	3	1	..	5	2	..	1	2	..	..	..	..	..	..
Congenital Debility and Malformation, including Premature Birth	82	..	..	..	..	..	..	..	82	23	6	8	3	..	17	9	15	1	1
Violent Deaths, excluding Suicide	3	1	7	4	2	8	2	7	34	7	4	3	..	1	9	7	3	..	8
Suicide	..	..	..	..	..	3	3	2	8	..	..	1	..	1	2	1	2	1	1
Other Defined Diseases	26	3	4	6	8	25	48	245	365	85	38	22	16	11	103	44	31	15	47
Diseases ill-defined or unknown	4	1	..	..	..	..	6	33	44	4	26	..	..	..	6	7	1	..	15
All Causes, certified and uncertified	188	25	28	35	37	111	203	527	1154	266	154	65	51	26	286	162	104	40	141
Uncertified Deaths	..	..	..	..	..	..	1	1	2	1	..	..	..	..	..	..	1	..	..

INFANT MORTALITY AT EACH AGE-PERIOD AND IN EACH DISTRICT.

Causes of Death.	Under 1 week.	1-2 weeks.	2-3 weeks.	3-4 weeks.	Total under 4 weeks.	1-3 months.	3-6 months.	6-9 months.	9-12 months.	Total Deaths under 1 year.	Urban Districts.					Rural Districts.			
											Boston.	Spalding.	Holbeach.	Long Sutton.	Sutton Bridge.	Boston.	Spalding.	East Elloe.	Crowland.
Small-pox	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chicken-pox	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Measles	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	1	..	..	..
Scarlet Fever	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	1	..	..
Whooping Cough	1	..	..	..	1	3	3	1	2	10	2	..	..	1	..	1	3	..	1
Diphtheria and Croup	..	..	..	..	..	1	..	..	..	1	..	2	..	1	..	..	..	..	..
Erysipelas	..	..	..	..	..	..	1	..	..	1	..	..	..	1	..	..	..	..	..
Tuberculous Meningitis	..	..	..	..	..	2	..	1	..	3	1	1	..	..	..	..	1	..	..
Abdominal Tuberculosis	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	..
Other Tuberculous Diseases	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Meningitis (not Tuberculous)	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..
Convulsions	2	2	..	1	5	3	3	5	4	20	3	3	..	1	..	4	3	5	1
Laryngitis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bronchitis	..	1	2	1	4	5	5	5	..	19	6	3	..	..	2	2	6	..	..
Pneumonia (all forms)	1	..	..	2	3	1	2	5	1	12	3	..	3	1	..	4	..	1	..
Diarrhœa	..	..	..	..	..	4	6	2	3	15	10	1	..	..	..	2	2	..	..
Enteritis	..	..	..	..	..	..	1	3	2	6	3	2	1	..	..	..	..	..	..
Gastritis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Syphilis	1	..	..	1	2	2	..	..	..	4	3	..	..	..	..	1	..	..	..
Rickets	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Suffocation, overlying	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Injury at Birth	1	..	..	..	1	..	..	..	..	1	1	..	..	..	..	..	..	..	..
Atelectasis	1	..	..	..	1	..	..	..	..	1	1	..	..	..	..	..	..	..	..
Congenital Malformations	2	..	1	1	4	1	2	1	..	8	1	..	1	..	..	4	2	..	..
Premature Birth	29	3	1	2	35	3	1	..	..	39	10	4	1	3	..	11	4	6	..
Atrophy, Debility and Marasmus	11	4	2	1	18	12	3	2	..	35	12	2	6	..	..	2	3	9	1
Other Causes	2	2	..	..	4	..	1	3	1	9	..	2	1	..	2	1	2	1	..
Totals	51	12	6	9	78	38	30	29	13	188	57	20	13	8	4	33	27	23	3

Other death-rates due to special diseases, or groups of diseases, are shown, with the corresponding rates for previous years, in the following table :—

Year.	Estimated Population.	Nett Birth Rate.	Nett Death Rate.	Infant Mortality per 1000 births.	Other Death-rates per 1000 of Population.					
					Zymotic Diseases.	Diarrhœal Diseases.	Tuberculous Diseases.	Phthisis.	Respiratory Diseases.	Cancer.
1911	82,996	25.1	15.1	117	1.64	1.16	1.23	.76	1.77	1.14
1912	83,543	23.9	13.3	90	.83	.23	1.27	.85	1.76	1.29
1913	84,104	24.0	13.3	95	.94	.36	1.05	.65	1.76	1.08
1914	**84,672**	**24.4**	**13.6**	**91**	**.93**	**.40**	**.88**	**.63**	**1.91**	**1.22**

INFANT MORTALITY.—188 deaths of infants under 1 year of age took place, the mortality being at the rate of 91 per 1000 nett births ; the corresponding rate for England and Wales being 105, and for rural England 93. The district mortality varied from 146 in the Boston Urban District to 44 in the Crowland Rural District, The rates in most of the districts were not high, the most unsatisfactory mortality being in the Boston and Long Sutton (110) Urban and East Elloe Rural (102) Districts. Nevertheless, if the whole question be thoroughly dealt with, all these mortality rates can be considerably reduced, as a large number of the deaths registered are assigned to causes which imply ignorance, carelessness, or indifference on the part of parents. It is a significant fact that the illegitimate infant mortality was 174 per 1000 illegitimate births. In September, I presented a report to the Health Committee advocating the adoption of the Notification of Births Act, the establishment of milk depots in suitable localities, and greater care in the methods of refuse collection and disposal by the sanitary authorities. Nothing was done at the time, but now that the Notification of Births

(Extension) Act, 1915, is in force, the original Act is operative throughout the County. The new Act places on local sanitary authorities the duty of collecting the necessary information, and on County Councils that of adopting remedial measures. The subject will, therefore, shortly come again under the consideration of the County Health Committee.

BOSTON URBAN.—"When I see the filthy, verminous, attenuated and altogether neglected condition of many of the children, varying in age from 1 to 8 years, who are admitted into the Isolation Hospital, I do not only wonder that Infant Mortality is so high, but that there are so many who live in spite of the great drawbacks they have encountered through either the ignorance or callousness of their parents. Is not this a reflection upon those who are supposed to look after the health and care of children ?"

The Borough Corporation has resolved not to join with the County Council in the adoption of the Notification of Births Act.

HOLBEACH URBAN.—"There is no improvement in the conditions affecting the life of infants or young children. Artificial feeding —a practice which is increasing so that the mothers may be able to work on the land—and the consequent use of unsuitable foods is the chief cause of death and suffering in infant life. In many instances the ignorance and carelessness displayed is almost incredible. Lack of milk in some parts—notably the Marsh—also affects adversely infants and young children."

INFECTIOUS DISEASE.

NOTIFIABLE DISEASES.

679 notifications of cases of infectious disease were made during the year. This number is considerably in excess of those for the three previous years, which were 477, 461 and 229, and the excess is due to the large number of notifications of Scarlet Fever in the Boston Urban and Rural districts.

Weekly returns of notifications received are expected from each district by the Local Government Board and the County Medical Officer ; their value, in the case of rural districts, would be increased if provision were made for stating the names of the parishes affected.

SMALL POX.—There were no cases. The uneasiness of the district medical officers of health becomes more manifest each year concerning the increasing proportion of the population which is unvaccinated and will assist in extending the next outbreak of Small Pox that may occur.

BOSTON URBAN.—65 children were successfully vaccinated, whilst the number of exemptions was 408.

SPALDING URBAN.—"I wish to draw the attention of the Council to the fact that there is a great reduction in the number of vaccinated children in the Urban district. While the number of children born has varied very little in the last twelve years, there has been a steady decrease in the numbers vaccinated. In 1902, 147 were vaccinated, 67 obtained exemption ; in 1914, 38 were vaccinated, 199 obtained exemption. Re-vaccination is rarely undergone, so that Spalding must not be considered a well-vaccinated community. A memorandum issued by the Local Government Board in August, 1914, states : 'There are possibilities at the present time of importation of small pox.' 'Recent 'vaccination or re-vaccination constitutes the only safeguard against 'attack for persons exposed to the infection of small pox, and all the 'measures can be carried out with a much more certain prospect of suc-'cess in a well vaccinated community.' It is well to recognise that in the event of an importation of small-pox only a small proportion of our population can be considered as even partially immune."

DIPHTHERIA.—There were 148 notifications of this disease (attack-rate 1.75 per 1000 population), nearly all of which were in the Boston Urban and Rural districts. There were 15 deaths, causing a case-mortality of 10.1 per cent., and a death rate of .18 per 1000 of the population. Only 22

NOTIFICATIONS OF INFECTIOUS DISEASE, 1914.

District.	Diphtheria and Membranous Croup.		Scarlet Fever.		Enteric Fever.		Erysipelas.	Puerperal Fever.	Pulmonary Tuberculosis.	Non-Pulmonary Tuberculosis.	Cerebro-Spinal Meningitis.	Poliomyelitis.	Ophthalmia Neonatorum.	Total Notifications.
	Total Cases.	Hospital Cases.	Total Cases.	Hospital Cases.	Total Cases.	Hospital Cases.								
URBAN:														
Boston Borough	67	19	173	43	16	8	11	1	23	6	—	—	2	299
Spalding ..	—	—	19	2	—	—	11	1	11	4	—	—	2	48
Holbeach ..	10	3	14	8	—	—	4	—	3	—	—	—	—	31
Long Sutton ..	8	—	3	—	1	—	6	1	6	4	—	—	—	29
Sutton Bridge	—	—	6	3	—	—	1	—	6	1	—	—	—	14
RURAL:														
Boston	57	10	104	47	5	—	14	1	11	2	—	1	1	196
Spalding ..	—	—	23	—	—	—	2	—	12	—	—	—	—	37
East Elloe ..	3	—	9	—	—	—	2	—	5	—	—	—	1	20
Crowland ..	3	—	—	—	—	—	1	—	1	—	—	—	—	5
Parts of Holland	148	32	351	103	22	8	52	4	78	17	—	1	6	679

per cent. of these cases were removed to Isolation Hospitals. Four school departments were closed. The greatest incidence of this disease was in the Borough of Boston, where 4 per 1000 of the population were attacked. There can be little doubt that many of the cases were infected by "carriers" or by convalescents who were still infective, and it would be an advantage if the methods adopted in the Boston Rural District, and mentioned below, were put into force, also, in other districts where bacteriological diagnosis has already been arranged for.

BOSTON URBAN.—An epidemic, continued from the preceding year, lasted far into June, abating somewhat during the next two months with a slight recrudescence in September, after which it gradually declined. 67 cases were notified, of which 6 were fatal. In one instance the disease was supposed to have been contracted from a previous case, but in a majority of the cases no cause, actual or predisposing, was discovered. Defective sanitary conditions, causing a liability to the occurrence of offensive smells, were noted in 20 cases, and dampness in 1 case. 3 of the cases notified were not Diphtheria.

HOLBEACH URBAN.—8 of the 10 cases notified were children attending the Old Girls' School, which has for years been in an overcrowded and insanitary state ; it is now disused.

LONG SUTTON URBAN.—Of the 8 cases, 5 were notified in November. Four of these were children attending the Girls' School. The source of infection could not be traced. The schools were closed for 4 days and disinfected, and no further cases occurred for 2 months.

BOSTON RURAL.—Investigation of the 57 cases of Diphtheria notified showed that the slop drainage was defective in 4 houses, privies were offensive in 9 houses, 2 houses were damp, the infection was derived from un-notified cases in 4 cases, and 2 cases were found not to be Diphtheria. Dr. Rendall is of opinion that the infection was probably spread in many instances by "carriers," who may or may not have been notified previously as having the disease themselves. Arrangements have now been made to minimise this danger, by which bacteriological examinations will be made in doubtful, and also in convalescent, cases, the doctors in attendance on the patients receiving a fee of 2s. 6d.

SCARLET FEVER.—351 cases of Scarlet Fever were notified (attack-rate 4.09 per 1000) and there were 10 deaths, causing a case-mortality of 2.9 per cent. and a death-rate of .12 per 1000 of the population. 29 per cent. of the cases were removed to Isolation Hospitals. Three school departments were closed on account of this disease. Three-quarters of the cases were in the Boston Urban and Rural districts, and nearly one-half in the Boston Urban district alone. The epidemic

in this part of the County originated in the Boston Urban district in October and reached its height during November, in which month 77 cases were notified, and the infection was conveyed from the town into the Rural district. Many of the cases were slight and unrecognised, and to this fact and also to the wilful concealment of cases Dr. Tuxford attributes the spread of the epidemic in the Borough.

The southern districts of the County area were unaffected by this epidemic, the number of cases notified being very similar to those of previous years.

BOSTON URBAN.—173 cases were notified, all except 8 of which occurred during the last quarter of the year. The accommodation at the Fever Hospital was inadequate to cope with the large number of cases, and the Port Sanitary Hospital was also utilised, accommodating 14 patients, and later one-half of the Small Pox Hospital also became available. The schools were disinfected every week, and two departments were closed from 30th October to 16th November. Cards of instruction as to isolation and non-attendance at school were left at each infected house, and the School Medical Officer was notified of school cases. Proceedings were taken in one instance against a parent for failing to notify that his child was suffering from the disease. Dr. Tuxford suggests that stringent measures should be taken in these cases which are responsible for the spread of infection through the schools.

HOLBEACH URBAN.—Of 8 cases occurring in October, the infection of the first case was derived from Spalding. In November, 5 children attending the Girls' School developed the disease.

BOSTON RURAL.—The infection was conveyed to Skirbeck and Kirton Skeldyke from Boston. Great difficulty was experienced in arresting its spread owing to the fact that the Isolation Hospital was full and isolation at home was frequently impossible.

ENTERIC FEVER.—22 cases of Enteric Fever were notified in the County area (attack-rate .26 per 1000) and there were 5 deaths, causing a case-mortality of 22.8 per cent. and a death-rate of .06 per 1000 of the population. 36 per cent. of the cases were treated in hospitals.

An undue proportion of these cases continues to be notified in the Boston Urban district. During the last 4 years, out of a total of 77 cases notified in the County, 39 occurred in this district. The notifiable diseases affecting the throat and intestinal tract, which are the regions most susceptible to the effects of defective sanitation, infected altogether 14.9 per 1000 of the population of the Borough during the year, and caused a mortality of .94 per 1000.

BOSTON URBAN.—There were 16 notifications of this disease, and 3 deaths. In one case it was contracted through nursing a patient. No definite cause was discovered in the other cases. Defective sanitary arrangements were noted in 8 cases. 6 of the cases occurred in Pulvertoft Lane, where complaint was made of the stench from a slaughter-house, which was so offensive as to make people sick. A collection of offal was removed from the slaughter-house, and the ash-closets, previously emptied once a fortnight, were attended to more frequently, and the nuisance was abated.

BOSTON RURAL.—Of the 5 cases notified, 2 were contracted (one by a nurse) from previous cases. In another case there was found to be a communication between the sink and the rain-water cistern supplying drinking water. One case proved not to be Enteric Fever.

ERYSIPELAS.—52 cases were notified, and 1 death took place from this disease—(attack-rate .61 per 1000).

PUERPERAL FEVER.—There were 4 notifications (attack-rate .07 per 1000 of the population) and 1 death from Puerperal Fever, the rate being .5 per 1000 births.

OPHTHALMIA NEONATORUM.—6 cases were notified.

POLIOMYELITIS AND CEREBRO-SPINAL FEVER.—1 case of the former and none of the latter disease were notified.

TUBERCULOSIS.—The number of notifications, as reported to me during and at the end of 1914 and summarised for the Local Government Board, was 91 of pulmonary and 21 of non-pulmonary tuberculosis. The corresponding figures, as returned with medical officers' reports, are 78 and 17. In the case of only one district does the number of notifications reported by the medical officer of health to me correspond with the number stated in his annual report, and in some instances the discrepancies are considerable.

The case-mortality, based on the former set of figures, is 67 per cent. for all tuberculous diseases and 58.2 per cent. for Phthisis. These figures will have more value when it is possible to calculate them for a series of years.

The death-rate, per 1000 of the population, is .88 for all tuberculous diseases and .63 for Phthisis. These rates are the lowest hitherto recorded. It is probable that the lower Phthisis death-rates during the last two years have been influenced by the institution of sanatorium benefit, though this can have had little effect on the comparatively larger fall in the general tuberculous death-rate, due chiefly to a great diminution in the number of deaths of non-pulmonary cases.

NON-NOTIFIABLE DISEASES.

MEASLES.—4 deaths took place from Measles (death-rate .05 per 1000). There were outbreaks of the disease in the extreme north of the County and in the neighbourhood of Spalding. 7 schools were closed in the County area.

WHOOPING COUGH.—There were 11 deaths from this disease (death-rate .13 per 1000). 4 schools were closed.

MUMPS.—This disease was very prevalent in many parts of the County during the year and necessitated the closure of 9 departments in the County area and of 8 in the area of the Boston Education Committee.

INFLUENZA caused 9 deaths (death-rate .11 per 1000).

DIARRHŒA.—The deaths from diarrhocal diseases numbered 34, causing a death-rate of .40 per 1000, which is somewhat higher than that for the two previous years. The districts chiefly affected were the Boston and Spalding Urban and the Boston Rural districts.

BOSTON URBAN.—There were 16 deaths, of which 13 were of infants. The disease is attributed to injudicious feeding, particularly to over-feeding with manufactured foods during the first few days of life, and to neglect of breast and milk feeding.

THE CONTROL OF INFECTIOUS DISEASE.

NOTIFICATION.—The diseases of which notification is now required by the Notification Acts of 1889 and 1899, or by order of the Local Government Board under Sec. 130 of the Public Health Act, 1875, are Small Pox, Plague, Cholera, Diphtheria and Membranous Croup, Erysipelas, Scarlet, Enteric, Continued, Relapsing, Typhus, Puerperal and Cerebro-Spinal Fevers, Acute Anterior Poliomyelitis and Pulmonary and Non-Pulmonary Tuberculosis. During the year 1914, Ophthalmia Neonatorum was made notifiable as from 1st April by order of the Local Government Board.

BACTERIOLOGICAL DIAGNOSIS.—The Boston, Spalding and Holbeach Urban and the Boston and East Elloe Rural District Councils have made arrangements for bacteriological examinations to be made in doubtful cases of Enteric Fever, Diphtheria, Tuberculosis and other diseases; and the Long Sutton Urban District Council has made similar arrangements in respect of Diphtheria only. These arrangements have generally been made with the Clinical Research Association, and now apply to more than half the County, the Councils which have as yet taken no steps in the matter being those of the Sutton Bridge Urban and the Spalding and Crowland Rural Districts.

In the Boston, Spalding, and Holbeach Urban and Boston Rural Districts the positive diagnosis of Diphtheria is followed up by the free provision of Diphtheria Antitoxin under the Local Government Board Order of 15th August, 1910. In the Long Sutton and Sutton Bridge Urban and Crowland Rural Districts no such provision is made.

ELEMENTARY SCHOOLS.—Now that means are available in so many districts for the examination of swabs from suspected throats, occasions will, no doubt, frequently arise in which the Medical Officer of Health will visit the schools during infectious outbreaks, make a routine examination of the children's throats and take swabs for bacteriological diagnosis in doubtful cases. This is far more satisfactory than the unscientific closure of schools during epidemics which has been necessary in the past, owing to the want of modern means of

diagnosis. Closure, even if only for disinfection, should rarely be necessary when Scarlet Fever or Diphtheria are prevalent, as experience has shown that these diseases can be controlled by other methods.

There is great scope for the development of a higher ideal of sanitation in many of the elementary schools in the County area. Improvements are continually being made, but much remains to be done to bring the ventilation, lighting, heating and form of sanitary convenience up to modern standards. The cleaning of the schools and the provision of supplies of drinking water have chiefly occupied my attention hitherto as School Medical Officer, and it is satisfactory to record that in these two particulars a great improvement is noticeable at many of the schools, especially in the provision of clean and efficiently filtered drinking water, obtained from the rain-water supply.

ISOLATION HOSPITALS.—There is no change to record in the isolation hospital accommodation available in the County. This accommodation and its deficiencies have been fully described in previous annual reports and in a special report of 16th March of this year in which suggestions were made for its improvement. Two alternatives were suggested. One was that each of the existing hospitals at Skirbeck, Spalding and Fleet should be provided with an additional wooden pavilion containing two wards and ten or twelve beds. By this means the risks caused by the present emergency would be to some extent provided against, beds being made available for either Small Pox or any other exceptional disease that may be imported into any of the County districts in consequence of the war or otherwise, whilst at all other times the accommodation for advanced cases of Tuberculosis, suggested in a succeeding paragraph of this report, would be at the disposal of the County Council. The two disadvantages of this scheme are that the system of small scattered fever hospitals, with their comparative lack of economy and efficiency, would be perpetuated, and that it would be attended by all the drawbacks associated with temporary buildings. The Health Committee decided that no immediate steps should be taken and adjourned consideration of the report. The probability now is that, unless some serious infection is actually brought into the County, this scheme will not be adopted. The other and better scheme is for the establishment of one central hospital for the whole County, con-

taining 60 or 70 beds, and for the taking over by the County Council of the three isolation hospitals now in use for the accommodation of cases of advanced Tuberculosis, these hospitals to be used for Small Pox when required ; and it is to be hoped, when conditions generally are such as to permit of the carrying out of the Tuberculosis scheme, that this development will follow as a matter of course. It is the only really satisfactory solution of the problem of safeguarding *all* the districts in the County against *all* infectious diseases.

The present accommodation for the civil population is now less adequate than before by reason of ten beds being reserved for the isolation, if required, of troops billeted within the County.

BOSTON URBAN.—"The Hospital usually contains only beds for 17 cases, but by making use of part of the Small-pox block and the Plague block (having been repaired), I was enabled to receive the large number of 38 at one time. The necessity for further enlargement of the Fever Hospital is adequately borne out by the above statement, and special blocks should be constructed for the different diseases, so that any case, be it either Cerebro-Spinal Meningitis, Typhoid, Diphtheria or Scarlet Fever could be admitted without fear of infection from other diseases. In my report to the Local Government Board I stated that it was impossible for me to admit more cases of Scarlet Fever into the Hospital owing to two of the wards being occupied by cases of Typhoid and Diphtheria, although there were empty beds in each ward.

But preferably to enlarging the present badly-arranged Hospital would it not be more economical to erect a new building upon a fresh site and upon lines approved by the Local Government Board, and possessing all the latest sanitary arrangements regarding ventilation, water, light, lavatories and drainage ?

I may further remark that owing to my not being able to receive more cases in the Hospital it has been a source of great annoyance and worry to many Urban and Rural Medical Practitioners. And when we are all striving our utmost to eliminate Diphtheria and Scarlet Fever, which have become almost 'endemic' in the districts (Boston Urban and Rural) it seems a pity that we should be thwarted in our endeavours through paucity of Hospital accommodation.

Observation and convalescent wards are also required."

The unsuitability of the present building, as well as the need for special wards, was demonstrated by the occurrence of two cases of cross-infection in the hospital during the year.

BOSTON RURAL.—"I consider that it would be to the benefit of the health of the district and also an economy if better Hospital arrangements could be made. You may possibly consider it advisable to control entirely a Hospital of your own. But I consider that your purpose would be better served by an addition to the present premises.

This would place a larger number of beds at your service and would do away with the necessity that now arises at times of mixing different infectious diseases under the same roof. At the present moment should an outbreak of Small-pox occur it would be necessary to remove the present inmates (Scarlet Fever patients) to their own homes to make room for the cases of Small-pox.

Dr. A. W. Tuxford, County Medical Officer, has suggested the advisability of one large Hospital for the County ; it is open to you to initiate such a scheme which would have many advantages over the present arrangements. But it is certainly advisable that better arrangements should be made and this would make epidemics of infectious diseases much more easy to deal with.''

SPALDING RURAL.—''There is no Isolation Hospital in the district, with the exception of a small portable one for emergency cases, such as tramps suffering from Small-pox. If an Isolation Hospital was built for this district alone, it would be closed for the greater part of each year, and in many years might not be required at all. It would be impossible to employ an efficient staff. An Isolation Hospital for Holland, with motor ambulance and a special staff, would be far more effective than any number of small local hospitals.''

DISINFECTION.—There is no note in any of the reports of any alteration in the methods of disinfection adopted in the various districts. The establishment of a steam disinfector at the Skirbeck Isolation Hospital is under consideration, and has been approved by two of the three Councils forming the Boston Joint Hospital Board. With one central fever hospital, a single disinfector would serve the purposes of the whole County. Under existing conditions, disinfectors should also be installed at Spalding and Fleet before the County can be considered adequately equipped in this respect. With regard to house disinfection, a very unsatisfactory system is disclosed in the following note from the Boston Urban report :—

''I regret that 'amateur disinfection' after infectious diseases has been sanctioned by the Sanitary Committee, as in nine cases out of ten it is imperfectly carried out, notwithstanding the assurance that it has been 'satisfactorily' done. In some cases it has been nothing but a farce, and I earnestly ask that the duty of disinfection be left entirely in the hands of the Sanitary Inspector.''

The dangers of this arrangement are obvious. Unless disinfection is carried out by officers of the local authority who understand all the details of the process, and with disinfectants which are really efficient, more harm than good will result.

DESTRUCTION OF VERMIN.—The possibility of various forms of infection being conveyed by house-flies is becoming more clearly recognised in some of the districts. The matter has been brought before their Councils by several medical officers of health, and in Spalding posters have been issued calling attention to the risks to health that may arise from this source. There is need, however, for an organised campaign for the destruction of their breeding places, extending over a large area, if any tangible results are to be obtained ; and this, in an agricultural community where flies are a part of the natural order of things, is not to be anticipated too hopefully.

Flies are capable of transferring the infection of Enteric Fever, Infantile Diarrhœa, Anthrax, Tuberculosis and other diseases from excreta and discharges to food ; and in the present state of the country, when infectious disease may so easily be introduced from abroad, it is of the utmost importance that their activities should, as far as possible, be suppressed. It has been calculated that a single female fly, laying a batch of 120 eggs in the spring, may be the parent of more than five-and-a-half billions of flies within four months, assuming that all survive but that each female lays only one batch of eggs, though capable of laying four to six batches. The only effective method of dealing with so reproductive a species is to attack it in its breeding places ; these include manure and excrement of all kinds, decomposing meat or vegetable matter, and all forms of garbage, but the favourite breeding place is horse-manure into which the fly crawls to lay her eggs. These hatch in eight to twelve hours, and the fully developed flies emerge in about ten days. It is impossible to prevent access of flies to refuse, but refuse may be rendered impracticable for breeding purposes by suitable treatment. As the result of extensive research, the Department of State at Washington has recently published information to the effect that the most efficient larvicide so far discovered is Borax which, by destroying the vitality of the eggs as well as by killing the larvæ, prevents 99 per cent. of the embryo flies from developing.

Ordinary commercial borax is applied by means of a flour dredger to the manure immediately on its removal from the stable, in the proportion of 10 ounces of borax to 10 cubic feet or 8 bushels of manure, and this is followed by two or three gallons of water. It is applied particularly to the outer edges of the heap near the ground where the pupæ are generally found. The correct strength of the application may be ensured by using

shallow frames for measuring the manure as it is removed from the stable. The borax should also be applied to the floors and crevices of stables. Manure treated with borax of this strength has been found to be improved, the ammonia being increased, nitrification accelerated and the bacterial flora uninjured ; and no injurious effects on plants have been observed on applying this manure to land at the rate of 15 tons to the acre, though they may follow if the strength or the rate of application be much exceeded.

The cost of this method of fly prevention is estimated at one halfpenny per day per horse, and is said to be justified alone by the improvement in the condition of horses and cattle which results from the cessation of irritation by flies. A means of prevention of such a simple, cheap and efficacious character should, if systematically put into force, be as successful as the destruction of the breeding places of mosquitos has been in the tropics.

The other precautions necessary include the prompt removal and destruction of all household refuse which in the short interval before removal should be deposited in sanitary galvanised iron dust-bins with tightly fitting covers. All refuse and manure after being carted to "tips" or to heaps on the land should be covered with a sufficient quantity of soil to prevent the access of rain. Kitchen and pantry windows should be screened with muslin, and flies may be trapped by various means. The Local Government Board recommend that a solution of formalin, of a strength of 1 in 80, should be used. These measures appear to meet with varying success, but they are of quite secondary importance, from the point of view of fly-extermination, compared with the destruction of the eggs and larvæ.

PREVENTION OF TUBERCULOSIS.—The scheme for providing dispensary treatment in this area under the direction of a Tuberculosis Officer is now complete, and has the approval of all the authorities concerned. Owing, however, to the dearth of suitable applicants for the appointment in consequence of the war, the scheme is to remain in abeyance until its conclusion. With regard to the establishment of a Sanatorium for the combined use of the counties of Lindsey, Kesteven and Holland and the county borough of Great Grimsby, little progress has been made. Several sites were inspected, of which

that at Roughton Moor was selected as being a most suitable one from every point of view for the erection of a sanatorium. Unfortunately, considerable opposition to the scheme was manifested in the neighbouring health resort, Woodhall Spa. No further steps have yet been taken.

Including 29 new cases, 69 persons were in receipt of sanatorium benefit from the Holland Insurance Committee during the year. Of these 12 died, 6 left the district, 6 returned to work, in 4 cases treatment was discontinued by patient or medical attendant, and 41 cases remained under treatment at the end of the year.

Six patients were at sanatoria at the beginning of the year, 18 were sent there during the year, and 2 were in receipt of this form of treatment at the end of the year. In a majority of the cases the period of treatment was two months, which is long enough for educative purposes if the patient has healthy surroundings to return to, but is of only very transitory benefit, either educational or curative, if the patient has to return to a slum. One surgical case was treated in hospital. Open-air shelters were in use by 21 patients who had suitable garden ground, 16 being still in use at the end of the year. When intelligently used, these shelters have been of great benefit ; in some cases, however, they have not been utilised to the best advantage, particularly in the winter months ; proper supervision of details of this nature can only be effected when Tuberculosis Health Visitors are appointed under the County Council scheme. The Insurance Committee rents 18 shelters, the property of the County Council. Domiciliary treatment by their own doctors was available for all the patients, and a large number received daily allowances of milk from the Committee.

After an additional year's experience in examining applicants for sanatorium benefit and their surroundings, I am still more firmly convinced that the disease will never be thoroughly controlled unless the advanced cases are always removed permanently from confined and overcrowded quarters, and unless a minimum amount of cubic space per person in the sleeping accommodation of houses (with the consequent limitation of the number of individuals that may occupy each dwelling) be fixed by legislation. The former of these proposals is necessarily somewhat expensive, involving as it does the housing and feeding of a number of patients for an indefinite and often prolonged period ; the latter suggestion may appear drastic, but,

until something of the kind is done, there will always be a tendency to crowd into houses more occupants than they were originally designed to accommodate, and so encourage the development and spread of Tuberculosis. Of the cases receiving sanatorium benefit, the homes of at least eleven are such that one can say definitely that recovery in them is impossible. These are chiefly town cases. There are numerous others, whose surroundings do not favour an open-air life, but in a number of these it has been practicable to put up a shelter and so minimise to some extent the injurious effect of the home on the patient.

Action by the local sanitary authorities under the Tuberculosis Order varies considerably according to the district.

The following is a summary of returns, asked for at the beginning of the present year, as to exercise of powers under this Order :—

Powers exercised under the Tuberculosis Order.	URBAN DISTRICTS.					RURAL DISTRICTS.			
	Boston.	Spalding.	Holbeach.	Long Sutton.	Sutton Bridge.	Boston.	Spalding.	East Elloe.	Crowland.
Bacteriological Diagnosis	Yes.	Yes.	No.	No.	No.	Yes.	Yes.	Yes.	No.
Supply of Sputum Flasks	Yes.	Yes.	Yes.	No.	No.	No.	No.	Yes.	No.
Distribution of Literature	No.	No.	No.	No.	No.	Yes.	Yes.	No.	No.
Disinfection	Yes.	Yes.	Yes.	No.	Yes.	Yes.	Yes.	Yes.	No.

It thus appears that a good deal remains to be done on the part of some of the local authorities in dealing with this disease.

MIDWIVES' ACT, 1902.—Seven midwives notified the local authority of their intention to practise during the year. Of these 4 were bona-fide midwives, and 3 were trained and certificated nurses. The former make efforts to conform to the regulations of the Central Midwives' Board, though not always understanding the reasons for those regulations. They now use clinical thermometers, and keep case-registers as well as

they are able to. Generally, their equipment is kept clean, but their homes are not in every instance kept in as sanitary a condition as is desirable. The certificated nurses, on the other hand, have carried out the regulations of the Board intelligently and as a matter of course, and their appliances are kept in a satisfactory condition. In two cases, however, a separate maternity register was not kept, the cases being entered in the district nursing register with those of other illnesses.

Warning notices were sent to two women in Boston who, though uncertified, were acting as midwives. One of these cases came to light through the patient dying, shortly after confinement, from Scarlet Fever. So far as I know, they have not attended cases since. There are possibly other women in Boston also practising illegally, though evidence of this is not easily procured. The vast majority of confinements throughout the area are, however, attended by medical practitioners.

One still-birth was notified during the year, and there were no notifications of deaths, laying out of dead bodies or sending for medical assistance. The cases of Puerperal Fever notified did not occur in the practices of any registered midwives.

WATER SUPPLY.

The four sources of water supply available in this County are :—

1. Rain Water.—If deep well water is not obtainable, this is the safest water to use for drinking purposes, and with a little more care than is generally given to the matter, fairly adequate supplies of clean and potable water may be derived from this source. Owing to the impossibility of preventing leakage of underground cisterns, storage in tanks above ground is preferable, and cleanliness of the supply may be ensured by periodical attention to roofs and spouting, by the use of coarse gravel filters and by providing the tanks in duplicate to facilitate the annual cleaning.

It is now many years since Mr. W. H. Wheeler, in "The Fens of South Lincolnshire," drew attention to the enormous amount of rain water, falling on the roofs of the large parish churches in this district, which is wasted annually, and suggested that it should be stored for the use of the villages. The suggestion does not appear to have been acted upon to any extent, and there are numerous outlying parishes which are not likely to have a piped water supply for many years, and which suffer from drought as a matter of course every dry summer. When peace is proclaimed, the event will probably be celebrated in these parishes by the establishment of a memorial of some kind, and this could not take a more useful form than the provision of a parish water store as a safeguard against drought and fire.

2. Surface Water.—The water obtained from rivers and land drains is used in outlying parts of the Spalding and Crowland Rural districts, and in other parts also when other supplies fail. This is not a satisfactory source of supply. The water supplied by the Boston Waterworks Company to Boston and Skirbeck is an upland surface water, and is referred to more fully later on.

3. Shallow Well Water.—This is extensively used in South Holland, and is a very unsatisfactory water for all domestic purposes. It is derived from the subsoil water or "sock" which, as it flows through the silt, bathes the walls of cesspools, dry-wells and privy vaults. It is very hard and, in places, brackish.

4. Deep Well Water from the Lincolnshire Limestone. This is very good water, its only disadvantage being that it is very hard and, for many parts of the County, at present inaccessible. The three chief supplies from this source are the Spalding town supply from springs at Bourne, the Spalding Rural District Council's supply from a bore at West Pinchbeck, and the Donington Water Company's supply from a bore near Donington. There are also bores tapping the same source at Deeping St. Nicholas and Crowland. The latter is at a considerable distance from the outcrop of the limestone at Bourne, and the water is too saline for domestic use.

There is no reason why the whole County should not, eventually, be supplied with water from the limestone. There is an ample supply, and it is infinitely superior to any other water that is available to the inhabitants.

The most important occurrence during the year, in connection with water-supply, was the failure of the supply from the Boston Waterworks Company's reservoir, whereby great inconvenience, as well as grave risks to the public health, were caused in the Borough of Boston and adjacent parts of the parishes of Skirbeck and Skirbeck Quarter. The water supplied by this Company is obtained from a gathering ground of about three square miles in area drained by Miningsby and Claxby becks which discharge into a reservoir with an area of 36½ acres and about 80 million gallons capacity, situated in the parishes of Claxby Pluckacre and Revesby, about 13 miles north of Boston Market Place. An auxiliary reservoir and settling pond of a capacity of about 5 million gallons has now been in use for the past two and a half years.

The water from the reservoir is passed through sand filters with a minimum depth of two feet and then carried to Boston through a 12-inch cast-iron main 13 miles in length, part of the supply being distributed from an elevated tank near Hospital Bridge containing when full about 45,000 gallons. The normal daily supply to the Borough of Boston is between 300,000 and 400,000 gallons.

The works belong to a private company, the Boston Waterworks Company, and were opened in July, 1849.

The supply, being an upland surface water, is dependent on the rainfall and, owing to the drought, fears of an insufficiency were first entertained in June. Actual shortage of water oc-

curred early in August, and by 10th September arrangements had been made to supplement the supply by bringing 10,000 gallons of water in tanks from Willoughby daily by train, though for some time after this date not more than 8,000 gallons were being supplied daily for drinking, cooking and baking purposes, the Miningsby water having been found unfit for domestic use. The supply from Willoughby was increased to from 20,000 to 25,000 gallons daily by the end of October. Complaints with regard to the inadequate supply were numerous, and the Borough Council took all possible steps to deal with the situation. The inhabitants were warned by means of handbills against using tap-water, the Local Government Board was asked to hold an enquiry, and the Waterworks Company was urged to make more satisfactory provision for a temporary supply. The supply of water from Willoughby was discontinued on 20th December, though Dr. Rendall, in his report presented to the Boston Rural District Council in the spring of the present year, states that the Miningsby water "cannot at the present time be considered safe to drink."

Early analyses of the water, made for the Waterworks Company, were regarded as confidential, the Medical Officer of Health of Boston being unable to disclose them, but copies of later analyses are reproduced in his annual report. The samples taken by the Waterworks Company were submitted to an analyst, whose reports in each case were more or less satisfactory. Those taken by the Medical Officers of Health for the Boston Urban and Rural Districts were analysed at three other institutions, the reports from which were unanimous in condemning the water. The bacteriological results obtained from the Water Company's samples were uniformly more favourable than those from the Medical Officers' samples in which the Bacillus Coli was always found in 10 c.c. or less of the water.

The grounds on which the water was condemned were the excessive proportions in which albumenoid ammonia, nitrates and Bacillus Coli were present in the samples, indicating recent pollution with sewage or with animal matter. This was only to be expected, if the condition of the reservoir during the autumn be considered. The reservoir, which is a large shallow lake, surrounded by trees, contained little water when I visited it in October. Large expanses of black mud were exposed containing fresh water mussels, dying or dead, in very large numbers. A man was engaged in collecting these, and at the further

end of the reservoir 14 men were removing the foot or two of black slime which covers its floor. A very small fraction of the total area had been thus cleared after several weeks' work. The conclusions arrived at after this inspection were—(1) that, though the water was not likely to be specifically polluted or liable to convey any definite infectious disease, the conditions under which it was stored in the reservoir were such that it was then totally unfit for domestic purposes and that it could not be regarded as a wholesome drinking water until the whole of the reservoir had been thoroughly cleaned; and (2) that, considering that the drought had already lasted for two months, the steps taken by the Waterworks Company to remedy the conditions prevailing at that date, either by cleaning the reservoir or providing an alternative supply had been remarkably inadequate.

So long as the existing source of supply is relied upon, there will always be a liability to a recurrence of the shortage under similar conditions of weather, and the possibility of obtaining a permanent supply from other sources should be considered. The nearest supply of deep well water is that of the Donington Water Company, which is about 12 miles from Boston. This water is pure, the supply (at present over 300,000 gallons per diem) is unfailing and could be increased by additional bores. The nearest point of the Spalding Rural District Council's water mains is about 13 miles from Boston. Either of these sources is capable of supplying Boston and Skirbeck with a constant service of good water, with the additional advantage of supplying also the villages traversed by the mains.

Special reports on this matter from the Medical Officers of Health of the Boston Urban and Rural Districts have been placed before the Health Committee of the County Council, who were advised that they had no power to deal with it.

In the southern part of the County, great progress has been made by the Spalding Rural District Council with its scheme for supplying the villages in its area. A main has been carried across the bed of the Welland, and a majority of the houses in Weston, Moulton and Pinchbeck already have the water at their doors. A fresh bore is also being made in the parish of Deeping St. Nicholas.

With regard to other districts there is no change to record; in some, the scarcity of water during the drought was acutely felt.

BOSTON URBAN.—In addition to the special report, a large proportion of the annual report is devoted to the subject of water supply. The main points have been summarised above. Dr. Tuxford also makes the following observations.

With reference to the cause of the shortage :—"I might mention that early in the year the Directors of the Water Company decided to erect a 'Valve Tower in about 15 feet of water without a coffer-dam.' I am informed that had the dam been built, the 90 million gallons of water would not have been run to waste, and consequently no shortage would have occurred. At the same time the absence of that dam was the exposure of a huge mud hole, foul smelling from putrefying shellfish, from which upwards of 23,000 persons obtain their drinking water!"

With reference to the temporary supply provided by the Waterworks Company :—"This short supply was totally inadequate, and much trouble was caused, not only by the indifferent manner in which it was distributed, but by the small amount given to consumers, of whom some received perhaps a quart, others more fortunate half-a-gallon, or sometimes a whole one, which had to serve a large family. In some cases they received more, and again other cases were unable to get any. Complaints were made to the Sanitary Committee, who unfortunately were unable to remedy them."

With reference to the unsatisfactory reports on samples analysed, Dr. Tuxford recommends that further analyses be made for some time at two or three weekly intervals.

The water supply being dependent on the rainfall, particulars of the latter are given. 21.7 inches of rain were registered during the year at Boston, and 22.8 inches at Revesby. February was the driest month in Boston, and April at Revesby, and December was the wettest month at both places. The greatest fall in 24 hours took place on 28th December, when 1.37 inches were measured at Boston and 1.33 inches at Revesby.

SUTTON BRIDGE URBAN.—"There seems to be some prospect again of a fresh water supply from the Spalding district. The pipes are laid over the greater part of the distance, and it is to be hoped that negotiations will not again fall through, as the present supply is neither good or adequate at all seasons. The district has to rely on shallow wells and rain cisterns, the majority of the latter being underground, and are therefore liable to pollution ; as only during very dry weather are they cleaned out. The well water is very hard, and as dead wells have for years been soaking into the ground in the vicinity of water bearing strata, it is difficult to imagine that these are above suspicion."

BOSTON RURAL.—In his special report on the shortage of water in Skirbeck during the autumn, Dr. Rendall remarks :—"I submit that the whole question of the water supply of Skirbeck deserves your earnest attention. It seems a great pity that we should be dependent upon a supply of surface water, as at present, which is at the best an unsatisfactory and unreliable source, when there is an excellent deep well water both at Donington and Bourne. If the latter source of supply were utilised, Swineshead and Kirton would be able to participate in the scheme."

SPALDING RURAL.—"The water supply has received the most careful consideration from the Rural District Council, and much progress has been made. Seven-inch mains have been laid from the bore at Pinchbeck West to the 'Horse and Jockey,' along Northgate, to Pinchbeck, thence under the River Welland through Weston and Moulton as far as the Whaplode boundary. Smaller mains have also been laid from the 'Horse and Jockey' to Bars Bridge, and thence to Money Bridge. From Money Bridge one pipe runs back to the main on the Northorpe Road, and another to the main at Pinchbeck Station. Pinchbeck is also supplied by smaller pipes from near the 'Bull' Inn, along Crossgate, and back by the Spalding Road. A pipe also runs along the Spalding Road as far as Otway House. Smaller mains are laid from Bampit Row, Weston, past Weston Mill and Weston St. John's School and Church, as far as Mr. John Cock's farm.

Another main runs from Moulton, past Moulton Station and the Austendyke, through Fen Gate to Moulton Chapel. A main also passes round Moulton village. There is also a main from near Weston Church to Mr. Harold Birch's farm, and thence to Mr. Caudwell's farm.

The Donington Water Company supplies the villages of Donington, Quadring and Gosberton, from a bore near the Forty Foot drain.

At Deeping St. Nicholas there is a bore near the Littleworth Railway Station from which a main is laid along the Spalding Road as far as Willow Farm cottages, and another a short way in the opposite direction. A bore has been sunk at the Hop Pole and a good supply of water has been tapped. Another bore is now being made near the Oat Sheaf, close to the Deeping boundary of the parish."

FOOD SUPPLIES.

MILK SUPPLY.—The milk supply is inadequate in various places in the rural districts. This is sometimes owing to the scarcity of cows in the neighbourhood, but in some cases there is no dearth of milk which is used solely for the purpose of making butter. One sees, during medical inspection at the schools, numerous children who are, and probably have been all their lives, in want of this particular food. Parents, of other children, who keep cows inform me that butter-making is more profitable, that owing to the greater attention that is now being given to the milk-supply its sale as such is too much hampered by regulations, or that they do sell the skimmed milk for children's consumption. The scarcity of milk available as a food must have its effects on the general nutrition of the population, and it is difficult to suggest any remedy, except the establishment by the local authorities of depots where clean milk can be purchased at a reasonable cost.

The second defect in the milk supply in this area is the extensive adulteration or impoverishment that is taking place in some of the milk that is being sold—(see Sale of Food and Drugs Acts).

Other possible defects are infection of the milk with Tuberculosis or with the germs of other illnesses caused by dirt introduced into the milk.

The former can be guarded against by systematic veterinary inspections of all milking cows in the area. The latter can only be efficiently prevented by a proper use, by the local authorities, of the powers conferred by the Dairies, Cowsheds and Milkshops Orders. Regulations under these orders have now been made by a majority of the District Councils, and the enforcement of these, particularly with regard to the provision of a clean and adequate water supply, will do much to raise the standard of cleanliness of the milk sold.

The dangers of contamination after sale are numerous. One is mentioned by Dr. Collins in the Sutton Bridge report. Others on the exposure of milk in the house to contamination by flies, and deficient storage accommodation, e.g., larders with little or no ventilation, or those frequent cases in which they have a south aspect and no protection from the sun's rays. These dangers can generally only be dealt with by ad-

vice in individual cases. Now that the Notification of Births Act is in operation in every district, Health Visitors will probably be appointed who will be able to undertake this amongst other duties. Medical Officers of Health appear, generally, to be satisfied with the conditions of cowsheds and dairies in their districts.

BOSTON URBAN.—One case of over-crowding of a cowshed and one of deficient lighting and ventilation were remedied.

SPALDING URBAN.—The dairies were inspected by the Medical Officer of Health and Sanitary Inspector.

HOLBEACH URBAN.—There are 7 registered milk sellers who keep their own cows, or obtain milk from farmers outside the town who are also registered. The Regulations are observed, and defects found are speedily rectified. The need for inspection of dairy cattle by a veterinary surgeon is suggested.

LONG SUTTON URBAN.—There are 3 purveyors of milk, but no dairies in the district.

SUTTON BRIDGE URBAN.—"There have been no prosecutions regarding milk during the year. The dairies are in good hands, and are clean, and the milk is delivered in an up-to-date method, but the trouble begins when it reaches the consumer. So many housewives are out during the hours of delivery, that the milk is placed in vessels which have been put out in the earlier part of the day. It is unnecessary to point out the inevitable contamination. Veterinary inspection of the herds do not take place."

BOSTON RURAL.—One cowshed was repaired, and 7 required lime-washing.

SPALDING RURAL.—There are no milkshops. Cowsheds and dairies are regularly inspected and are in a satisfactory condition.

EAST ELLOE RURAL.—The premises of the 4 registered milk-sellers are, on the whole, kept in a satisfactory state. Veterinary inspection of dairy cattle is recommended, also, for this district.

CROWLAND RURAL.—The milk supply is from small cow-keepers owning one or two cows. Cowsheds and dairies are inspected from time to time.

BAKEHOUSES.—There are notes stating, or implying, regular inspection of bakehouses in the reports from the Spalding, Holbeach and Sutton Bridge Urban, and the Spalding, East Elloe and Crowland Rural Districts and, in all except the first of these reports, there is a further note that their condition is satisfactory. They are lime-washed twice yearly in the Holbeach Urban and East Elloe Rural Districts.

SLAUGHTER-HOUSES.—These are stated to have been inspected in reports from all the districts, except the Boston Rural. Their condition is noted as satisfactory in the Boston and Sutton Bridge Urban, and the Spalding, East Elloe and Crowland Rural Districts. In one case in the Holbeach Urban District the premises were in an insanitary condition and a neighbouring pit was used as a means of disposing of blood and refuse; an order was made to remedy this. In the Long Sutton Urban District two nuisances in connection with slaughter-houses were found.

The establishment of public abattoirs would do away with the nuisances which frequently arise from the present private slaughter-houses which are often badly adapted and situated for the work. It would also facilitate and render more efficient the work of meat inspection. There is at present no abattoir in the County area.

UNSOUND FOOD.—In one case unsound food was condemned in Long Sutton. In the East Elloe Rural District, a carcase of tuberculous beef was seized at a slaughter-house at Sutton St. James. The butcher was prosecuted and fined £5. No case of anthrax was reported, one suspected case in the Boston Rural District being certified by the Inspector of the Board of Agriculture not to be infected with this disease.

SALE OF FOOD AND DRUGS ACTS.—These Acts are administered through the agency of the police, except in the Borough of Boston, which is a separate Authority, the samples here being taken by the Sanitary Inspector.

The following table, which summarises the action taken by the two Authorities, is drawn up from the quarterly reports of the County Analyst and the annual report of the Medical Officer of Health for the Borough of Boston :—

Food or Drug Analysed.	Administrative County.			Borough of Boston	
	No. of Samples taken.	No. found Adulterated.	No. found inferior.	No. of Samples taken.	No. found Adulterated.
Milk	17	1	..	21	2
Butter	19	1	3	20	..
Lard	8	..	..	..	..
Arrowroot	1	..	..	..	..
Bread	14	..	..	..	..
Cocoa	10	..	1	..	..
Chocolate Powder..	1	1	..	..	..
Tea	1	..	..	..	..
Vinegar	..	..	..	6	..
Linseed	3	..	..	..	..
Pepper	1	..	..	..	..
White Pepper	1	..	..	..	..
Ground Ginger	2	..	..	..	..
Vanilla Jelly	1	..	..	..	..
Brandy	1	1	..	..	..
Preserved Cream ..	..	..	..	2	..
Fresh Cream	..	..	..	1	..
	80	4	4	50	2

The number of samples taken during the year in the County area was at the rate of 1 for every 845 of the estimated population, as compared with 1 for every 340 of the population of the Borough of Boston during the same period, and 1 for every 381 of the population of England and Wales (excluding London) during the year 1912.

Whilst the total number of samples taken yearly during the last three years does not increase with the growth of the population, the proportion of samples of the most important food, milk, has diminished from 41 per cent. of the total in 1912 to 21 per cent. in 1914. And the County Analyst reports that of the 17 samples of milk taken only 6 were of good quality, 7 being of fair and 3 of poor quality. It is satisfactory to note that, during the present year, the County Council have decided in view of a very unfavourable report by the Analyst, to have a much larger number of milk samples submitted to analysis.

One sample of Milk was devoid of fat to the extent of 5 %; no action was taken in this case.

One sample of Butter contained 15.5 % excess of water beyond the legal limit of 16 %. The vendor was summoned and fined £2 2s. and 31s. costs.

Four samples of Butter contained Boric Acid in amounts below 5 %.

One sample of Chocolate Powder contained 30 % of starch other than cocoa starch; no action was taken.

One sample of Brandy was 25.51 degrees under proof, the legal limit of strength being 25 degrees under proof; no action was taken in this case.

The samples of Milk were taken under the Food and Drugs Acts, and apparently no action has been taken in the County area under the Public Health (Milk and Cream) Regulations, 1912, during the year.

In the Borough of Boston, one sample of milk was found to contain 8.47 % of added water; the vendor was summoned and fined £2 and 28s. 6d. costs. Another sample was devoid of fat to the extent of 12 %; the vendor was summoned and fined 5s. and 6s. 6d. costs. Of the 20 informal samples of butter taken in the Borough, 5 contained Boric Acid in amounts less than .5 %. The samples of milk and cream were taken under the Public Health (Milk and Cream) Regulations, 1912, and no infringement of these regulations was detected.

HOUSING.

A summary is given below of the inspections made, with the subsequent action taken, in each district under Sec. 17 of the Housing, Town Planning, &c., Act.

District.	No. of houses inspected.	No. of houses found to be unfit for human habitation.	No. of representations to local authority for closing orders	No. of closing orders made.	No. of houses in which defects were remedied		General character of defects found.
					without the making of closing orders.	after the making of closing orders.	
URBAN:							
Boston	130	14	14	14	41	5	
Spalding.....	686	None.	None.	None.	30	None.	Roofs, windows and closets.
Holbeach	108	1 (closed)	None.	None.	7	None.	
Long Sutton ..	None.	None.	None.	None.	4	None.	Defective windows, doors and spouting.
Sutton Bridge	60	None.	None.	None.	Not Stated	None.	Dampness, blocked drains.
RURAL:							
Boston	106	3	3	3	17	1	
Spalding.....	No Information.						
East Elloe	56	3	3	3	42	None.	
Crowland	30	None.	None.	None.	Not Stated	None.	Defective drains, closets, paving, spouting, water supply, &c.

The summary shows a great variation in the work done in the different districts. In the Spalding Urban District inspections have been made of 686 houses, whilst in Long Sutton no inspections have been made, as required under this section. The conditions as regards housing in the latter district cannot be regarded as satisfactory, and I have recently inspected

houses there which, in default of extensive improvements, should be closed. Closure, however, is difficult in this case, as there is a great dearth of working-class houses, and this Council is one of the few remaining in the County which has, as yet, provided no new dwellings in their district, though they have had the matter under consideration. The defects observed were deficiency of lighting and ventilation, insanitary methods of sewage disposal, and overcrowding, and have already been dealt with in a special report.

Overcrowding is found, also, in other districts, sometimes in combination with very defective ventilation. In Crowland I found three houses in which additional sleeping accommodation had been provided by means of a wooden partition across the bedroom, the space partitioned off having no window and little or no ventilation of any kind. One of these spaces had a capacity of 588 feet and was occupied by a mother and two children ; two others of 360 cubic feet were each occupied by two or more children. It would be hard to find better incubators for the bacillus of Tuberculosis.

The remedy for overcrowding has already been suggested in this report. A consensus of opinion is required as to the minimum space in the sleeping accommodation that is necessary for the health of the average individual. At present, every medical officer of health has his own standard, and these are liable to vary widely. It would then be possible to insist on adherence to the recognised standard, at all events in the case of all new houses that may be built, assuming that in each case the ventilation was also satisfactory.

Dampness, smallness of rooms and deficient lighting and ventilation are the chief defects met with in the older houses in all parts of the County.

In previous reports it has been necessary to criticise some of the cottages erected by District Councils. A row of houses has been built at Donington by the Spalding Rural District Council, the larder windows of which face the closet-doors at a distance of 15 feet and pig-styes at a distance of 30 feet. Pig-styes should not have been allowed at all, as the land attached to the houses is not sufficiently extensive, and a better design of the sanitary arrangements would have obviated the complaints that are made. Attention to details of this kind is particularly desirable when houses are built by the local authorities, so that they may afford an example to be followed, and not avoided, by local builders ; this result could always be ob-

tained if District Councils would take the advice of their Medical Officer of Health before passing the plans. The Spalding Rural District Council has now built no less than 60 cottages of several different types, and some recently erected in Quadring are in their design, situation and equipment probably the most suitable that have yet been erected in the County.

BOSTON URBAN.—14 closing orders were made, and in 8 cases the houses were demolished. 5 new dwelling-houses were built during the year.

SPALDING URBAN.—"The erection of houses for working classes has been the subject of a Local Government enquiry. There is ample evidence that houses are required, but present conditions prevent any extension of the Housing scheme. The houses already built are all occupied, and give satisfaction to the tenants. In some respects the enforced delay in building more houses is an advantage, for those already erected are useful object lessons in showing in what way certain things may be avoided, and also how improvements may be carried out."

HOLBEACH URBAN.—"In the town and more thickly populated parts of the district there are still many cottages which owing to age and small size are unfit for habitation.

Overcrowding is common. To deal in a drastic manner with these cases is at present impossible, for owing to the dearth of labourers' cottages the occupiers would be either compelled to leave the district or take shelter in the Workhouse. Several of these cottages have temporarily been rendered more habitable by raising the roofs, increasing means of ventilation and lighting, and repairing generally.

Eighteen new cottages have been erected in Drake Lane, and are all occupied. There is great need of more cottages in the district."

LONG SUTTON URBAN.—The Council entered into a contract for the purchase of a piece of land in the Delph Road for building purposes. Owing to the War, the prices of building material and the rate at which money could be borrowed both advanced, and the scheme was deferred for 12 months.

8 new houses have been built.

SUTTON BRIDGE URBAN.—"Houses of a certain rental are certainly wanted in the district, but overcrowding is lessening. One case is now being dealt with. The difficulty is very real, as the largest families are less able to pay the necessary rent, and as the average wage runs low, with the present rise in the cost of living, it is hardly the time to put on too much pressure in this direction. The Council have purchased nearly 4 acres of land, and had intended to put up 6 pairs of houses, but will proceed with 4 pairs as a start. These are to have half a rood of land to each of them. One must hope that the venture will be a success, and that more may follow."

BOSTON RURAL.—33 new houses were examined for certificates re water supply, and 23 damp and dilapidated houses were repaired and ventilated.

SPALDING RURAL.—"This Council has been very energetic in attempting to solve the housing question, having built 60 new houses. The County Council has also built 8; and 10 have been erected by private persons."

EAST ELLOE RURAL.—The number of old and dilapidated cottages is steadily decreasing year by year, not by closure but by constant attempts to render them more habitable by raising roofs, improving the ventilation, &c. The worst features are defective sleeping accommodation, the bedroom roof, in many cottages, beginning 2 or 3 feet above the floor, and overcrowding, the worst cases only of which can be dealt with. The Council has built 42 cottages and propose to build 12 more, for which there is still great need.

CROWLAND RURAL.—The building of cottages by the District Council has relieved the dearth of houses, and there are now several empty houses. It is expected that some of the worst cottages will shortly be closed and demolished.

GENERAL SANITATION.

ADOPTIVE ACTS, BYE-LAWS, &c.—The accompanying table gives as complete a statement as it has been possible to obtain of the additional powers assumed by the local authorities, by means of adoptive Acts of Parliament and Bye-laws, to promote sanitation in their districts. —

	Urban Districts.					Rural Districts.			
	Boston.	Spalding.	Holbeach.	Long Sutton.	Sutton Bridge.	Boston.	Spalding.	East Elloe.	Crowland.
ADOPTIVE ACTS.									
Public Health Acts Amendment Act, 1890	Yes[1]	No	No	No	No	No			No
Public Health Acts Amendment Act, 1907	Yes[2]	No	No	Yes[3]	No	No			No
Infectious Diseases (Prevention) Act, 1890	Yes	No	No	No	No	No			No
Cleansing of Persons Act, 1897	No	No	No	No	No	No			No
Private Streets Works Act, 1892	Yes	No	No	No	No	No			No
Notification of Births Act, 1907	No	No	No	No	No	No			No
BYE-LAWS AND REGULATIONS.									
Public Health Act, 1875 :—									
Sec. 44—Scavenging and Cleansing	No	Yes	No	Yes	Yes	No	No reply received.	No reply received.	No
Sec. 44—Prevention of Nuisances	Yes	Yes	No	Yes	Yes	No			No
Sec. 44—Keeping of Animals	Yes	Yes	No	Yes	Yes	No			No
Sec. 80—Common Lodging Houses	Yes	Yes	Yes	Yes	Yes	No			No
Sec. 90—Houses Let in Lodgings	No	Yes	No	No	No	No			No
Sec. 113—Offensive Trades	Yes	Yes	No	No	No	No			No
Sec. 141—Mortuaries	No	No	No	No	No	No			No
Sec. 157—New Streets and Buildings	Yes	Yes	Yes	Yes	Yes	No			No
Sec. 167—Markets and Fairs	No	Yes	No	No	No	No			No
Sec. 169—Slaughter Houses	Yes	Yes	Yes	Yes	No	No			No
Public Health Acts Amendment Act, 1890 :—									
Sec. 20—Public Sanitary Conveniences ..	?	Yes	No	No	No	No			No
Sec. 23—New Streets and Buildings	?	Yes	No	No	No	No			No
Sec. 26—Scavenging and Cleansing	?	Yes	No	No	No	No			No
Housing of the Working Classes Act, 1885 :—									
Sec. 9—Tents, Vans, Sheds, &c.	Yes	?	No	No	No	No			No
Public Health (Interments) Act, 1879 :—									
Sec. 2—Cemeteries	No	Yes	No	No	No	No			No
Public Health (Fruit Pickers') Act, 1882 :—									
Accommodation for Fruit and Vegetable Pickers	No	?	No	No	No	No			No
Dairies, Cowsheds and Milkshops Order :—									
Regulations under the Order	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes

1.—Part III. only.
2.—Except Part IX. and Sec. 94 of Part X.
3.—Sec. 95 only.

There appears to be considerable uncertainty in some districts as to what powers the Councils possess, and in certain cases the enquiry forms issued have been referred to the Council clerks, in order that the minutes may be searched.

The Bye-laws of the Long Sutton Urban District Council date from 1860, and the regulations now in force with respect to dairies and cowsheds date from 1879, or six years before the date of the first Dairies, Cowsheds and Milkshops Order. New bye-laws for new streets and buildings are now under consideration.

The Regulations in force in the Spalding Urban District were in most cases made by the Improvement Commissioners p ior to the passing of the Public Health Act of 1875.

No district is as yet overburdened with optional powers, though all the medical officers of health returning the forms, in reply to a question, expressed the opinion that no more are needed in their districts.

MILITARY BILLETS.—Since the outbreak of war, troops have been billeted at certain places within the County area. The billets are under sanitary supervision by (1) the Royal Army Medical Corps, (2) the local sanitary authorities, (3) the County Medical Officer, and (4) the Local Government Board. They have thus received numerous visits of inspection and various defects, in connection with ventilation, dampness, water supply, closet accommodation and refuse disposal, have from time to time been remedied. The billets, on the whole, are satisfactory, and their sanitary arrangements are as good as the state of progress of the districts in which they are situated will allow.

Considerable difficulty was experienced in reserving fever hospital accommodation, in case it was needed by the troops. It was ultimately arranged that 6 beds should be reserved at the Skirbeck Hospital and 4 at the Fleet Hospital, the beds at each Hospital being divided equally between the Diphtheria and Scarlet Fever wards. Owing to the inadequacy of fever hospital accommodation generally in the County, it was impossible to arrange for the reservation of further beds for other diseases. As it happened, these arrangements had to be made at a time when the need for beds at the Skirbeck Hospital for the civil population was probably more urgent than it ever has been. No cases of infectious disease were reported amongst the troops during the year.

The billets were inspected in November by Dr. Reginald Farrar on behalf of the Local Government Board. There is no reference to their inspection in any of the reports from districts in which they are situated.

COMMON LODGING HOUSES.—No Bye-laws, as required by Sec. 80 of the Public Health Act, 1875, have yet been made by the Crowland Rural District Council for the regulation of Common Lodging Houses.

BOSTON URBAN.—A third lodging-house was licensed during the year. All the lodging-houses were kept in as sanitary a condition as possible, and afforded lodging to 11,233 persons during the year.

SPALDING URBAN.—There is no note.

LONG SUTTON URBAN.—There is no note.

CROWLAND RURAL.—There is one lodging-house, which is satisfactory.

OTHER LODGINGS.—A considerable number of Belgian refugees have been housed in public and private buildings in Spalding; and, since September, 15 to 18 refugees have been quartered in Long Sutton in premises attached to the Congregational Chapel.

Accommodation is provided for fruit and potato pickers from the large towns on some of the farms in the East Elloe Rural District, where outbuildings are fitted up as living and sleeping rooms; the sanitary arrangements are reported to be satisfactory.

MOVEABLE DWELLINGS.—BOSTON URBAN.—There are 8 canal boats on the register, of which 4 are owned locally. Three boats were inspected and found in good order. 29 vans were also inspected and found in a cleanly state.

SHIPPING.—BOSTON PORT.—The work at the Port was reduced owing to the War. 782 vessels arrived at the Port, of which number 604 entered the Dock. 13 foreign and 7 coastwise vessels, including 17 steamships, were inspected, and defects were reported in 6 cases. In one case the water supply was not good, and in another the ship arrived in Dock without a supply. The crew's quarters were dirty in one instance, and the closets were dirty in 4 cases and absent in 1. The cubic capacity of the crews' quarters is reported to have been inadequate in some cases.

A seaman from a Naval vessel was admitted to the Isolation Hospital as a case of Diphtheria, and found to have Mumps.

The closets at the Dock have been renovated and are now in a sanitary condition.

WISBECH PORT.—253 vessels, of which number 33 were from foreign ports, entered the Port during the year. All the foreign and many coasting vessels were inspected. In a few cases it was necessary to have the forecastles and closets cleaned. No infectious disease was found.

An arrangement has been made with the Admiralty for the use of the Port Sanitary Hospital, in cases of emergency, for the reception of wounded sailors, unless the hospital is required for infectious cases.

FACTORIES, WORKSHOPS AND WORKPLACES.— The sanitary condition of these places is regulated by the administration of the Factory and Workshop Act, 1901. Under this Act the duties of District Councils include the supervision of —(1) the sanitary condition of workshops and workplaces generally ; (2) provision of means of escape from fire in workshops ; (3) special sanitary regulations for bakehouses ; (4) home work.

FACTORY AND WORKSHOP ACT, 1901.	Urban Districts.					Rural Districts.			
	Boston.	Spalding.	Holbeach.	Long Sutton.	Sutton Bridge.	Boston.	Spalding.	East Elloe.	Crowland.
Inspections of Premises.									
1. Factories (including Factory Laundries) ..	—				4				
2. Workshops (including Workshop Laundries)	220	36	Twice a Year.	8	4	174		Twice a Year.	25
3. Workplaces (other than Outworkers' premises)	—				6		30		
Total	220	36		8	14	174	30		25
Written notices sent						7	2		
Defects Found and Remedied.									
(a) Nuisances under Public Health Acts.		—	—	—	—				
Want of Cleanliness	—					7	1		1
Want of Ventilation	1								
Other Nuisances									
Sanitary accommodation unsuitable or defective	6								
Sanitary accommodation not separate for sexes	2								
(b) Offences under Factory and Workshops Act	—	—	—	—	—	—	—	—	—
Home Work.									
No. of names of Outworkers received twice a year	17			—	—	6	—		
No. of names of Outworkers received once a year	409			—	—	43	—		
Notices served on Occupiers as to keeping or sending lists (Sec. 107)	7					4			
Outwork in unwholesome premises (Sec. 108) ..	—						—		
Outwork in infected premises (Secs. 109, 110)..	12					2	—		
No. of Registered Workshops at end of year	180	68	48	26	4	124	26	45	19
Cases notified by H. M. Inspector for action under the Public Health Acts	9	—	—	—	—	1	—	—	—
Reports (of action taken) sent to H. M. Inspector	9	—	—	—	—	—	—	—	—

The outworkers in the Boston Urban and Rural districts are engaged chiefly in pea-picking and to a less extent in making wearing apparel.

NUISANCES.—There is no change in the manner in which the Sanitary Inspectors' reports are made, and the requirements of the General Order of the Local Government Board of 13th December, 1910, have not been completely carried out in any of the reports, except that from the Long Sutton Urban district. It is not, therefore, possible to make a concise summary of the work of their departments during the year.

BOSTON URBAN.—410 nuisances were abated, and 18 cases were outstanding at the end of the year. The report of the Sanitary Inspector contains a classified list of the nuisances abated, but there is no tabular statement, as required by the Local Government Board, of the number of inspections, the number of statutory and informal notices served, and the result of their service.

SPALDING URBAN.—There is no note on this subject in the report.

HOLBEACH URBAN.—1426 inspections were made, 11 statutory and 43 informal notices were served, and 12 houses were wholly or partially repaired as the result of 7 of the statutory notices.

LONG SUTTON URBAN.—675 inspections were made for all purposes, including those of the Housing and Town Planning Act. Nuisances were found in 87 cases. 6 statutory and about 80 informal notices were served. All the statutory and 56 of the informal notices were complied with, 2 being partly effective and 8 remaining open at end of the year.

SUTTON BRIDGE URBAN.—There is no note as to nuisances or the service of notices.

BOSTON RURAL.—136 nuisances were remedied, and in 17 cases works were in course of completion. The number of inspections and notices served is not stated.

SPALDING RURAL.—There is no note on this subject.

EAST ELLOE RURAL.—2500 inspections have been made, and 17 statutory and 40 informal notices served.

CROWLAND RURAL.—866 inspections were made, of which 220 were to cowsheds and dairies, 54 to slaughter-houses and 72 to bakehouses. 15 statutory and 130 informal notices were served, the statutory notices referring in 4 cases to drainage, 4 to water supply, 3 to closet accommodation, 1 to defective paving and 2 to overcrowding.

REFUSE DISPOSAL.—There is no change to record in the methods adopted for the removal and disposal of refuse and excreta, though these methods cannot be considered satisfactory in any of the districts. The objections to the present system are clearly stated by Dr. Munro, whose remarks are quoted below and are equally applicable to the conditions obtaining in other districts. Many forms of refuse afford food for bacteria as well as for the larvæ of flies, and all refuse should therefore be stored in such a way that no dissemination of it is possible by wind, flies, or other agencies, and there should be no great difficulty in achieving this result. All that is necessary is : (1) for the householders to keep the refuse, whilst on their premises, in receptacles with tightly-fitting covers, and as an additional safeguard, to wrap in paper any decomposable food that cannot otherwise be disposed of, as by burning, before placing it in the bin ; (2) for the Council to remove the refuse in covered carts, at least once weekly in the summer, at an hour when there is little traffic ; and (3) to cover the refuse, when deposited on the tip, with an adequate layer of earth. The most satisfactory means of dealing finally with the refuse is by means of destructors, but the prospect of their provision is now more remote than ever. The special treatment of stable refuse for the prevention of the breeding of flies is described on page 24.

Privy vaults are being gradually replaced by pan closets in many districts. The latter are by no means ideal, though they ensure the frequent removal of offensive matter. Earth closets would afford a satisfactory solution of this problem, but they require a little more application in their management than they are likely, in general, to receive.

The notes in brackets that follow are derived from a Return as to Scavenging in Urban Districts, recently issued by the Local Government Board.

BOSTON URBAN.—The refuse destructor would probably have been erected, but for the War.

[There are 380 dry ashpits, forming 20 % of the total receptacles in the town. 300 ashpits have been replaced by sanitary bins in recent years. All refuse is carted to a tip outside the Urban district, and used for filling up disused pits.]

SPALDING URBAN.—"The arrangements for the removal of house refuse seem to me capable of improvement. I think that it is undesirable that open carts should collect refuse during the business hours of the day. To have open carts filled with refuse passing through the streets of the town, with wind blowing dust and papers on to passers-by, is at variance with the theory of Preventive Medicine.

Another point to which I should like to draw attention is the unsatisfactory method of storing refuse in yards until such time as it can be removed. Proper receptacles are often absent, and even those who are able to buy them use them for vegetable matter, which it would be quite easy to burn. The presence of decaying vegetable and other matter near inhabited houses is important, particularly during the summer months, as flies are so readily attracted. The importance of flies as a factor in causing disease is not generally known, and I regret that my advice, conveyed through the Sanitary Inspector, to disseminate information by means of posters and handbills was not more favourably considered. I hope that the Council will again give this matter their consideration."

[There are 500 sanitary bins and 900 buckets, boxes and small tubs in use. Open carts are employed, and covered with cloths in windy weather. All the refuse is disposed of on 2 tips, distant respectively 200 and 880 yards from the nearest house.]

HOLBEACH URBAN.—Pail closets are emptied, washed, disinfected and replaced at night, twice weekly by scavengers. Privy vaults are emptied by occupiers. 13 privy vaults were converted into pail closets during the year, and 5 new closets added to existing houses.

"In the case of the larger houses, house refuse is placed in fixed open bins, which are emptied when full; but the majority of householders put refuse into pails or boxes and twice a week place these receptacles in the street where they are collected by scavengers and emptied into an open cart and removed to a tip outside the town.

Having regard to the many dangers arising from privy vaults, I would ask your Council to compel owners to substitute for them, earth closets, also that each house should be provided with a covered bin for refuse, and that the cart for removing the same should be covered.

[There are 20 dry ashpits, 50 sanitary bins and 600 large tins, buckets, &c., in use. No special type of receptacle is required for new houses. Open carts are employed, and all the refuse is disposed of at one tip which is 50 yards from the nearest house. The scavenging is done by contract. There are 300 cess-pools, which are emptied when necessary by a contractor at the occupiers' expense.]

LONG SUTTON URBAN.—There is no note on this subject.

[There are 2 wet and 50 dry ashpits, the latter forming 11 % of the total receptacles. 75 ashpits have been replaced by sanitary bins in recent years. No special type of receptacle is required for new houses. Dry refuse is used for filling in old pits; privy refuse is disposed of on the land.]

SUTTON BRIDGE URBAN.—House refuse and the contents of privies, pan-closets and ashpits are removed by the Council's carts and tipped on land where no nuisance is caused. The work is done efficiently. Sanitary bins are being provided for new houses.

[There are 432 wet and 37 dry ashpits. 80 ashpits have been replaced by sanitary bins in recent years. Open carts are used, and refuse is deposited on one tip outside the town.]

EAST ELLOE RURAL.—"Privy vaults are the rule, though in the villages there are a few pail closets.

Vaults are frequently too large and remain unemptied for too long a time. There is extreme danger of polluting the water supply, and they are an excellent breeding place for flies which by infecting food are responsible for a considerable amount of illness.

Again I would suggest that as no provision has been made for scavenging or emptying closets and privies in villages, these vaults be replaced by earth closets, and that where no space exists for emptying the same, owners should be made responsible."

CROWLAND RURAL.—"The house refuse in the village is removed twice a week in a cart sent round by the Sanitary Authority. Pails from closets are also collected by the same cart. Privies are emptied by the occupiers."

SEWAGE DISPOSAL.—The only district in which modern methods of sewage disposal have been adopted is the Spalding Urban District, where a small portion of the town's sewage is dealt with by means of a septic tank and bacterial filter beds. Other sewage from the town is discharged into the tidal waters of the river Welland. A scheme is at present under consideration for the bacterial treatment of the whole of the sewage of Spalding. The main portion of the sewage of Boston goes to the sea, via the river Witham, without preliminary treatment. Some of the remainder is discharged into the Bargate Drain. The remaining Urban districts are relieved of a portion of their sewage by open drains which eventually reach the sea, either directly or through the river Nene. The remainder of the sewage of these towns and that of the Rural districts is disposed of to cess-pools, or dry wells, from the latter of which the sewage can percolate into and pollute the surrounding subsoil. The elevation of the land varies, throughout the County, between 6 and 21 feet above O. D.; this fact forms the chief obstacle to the initiation of schemes for sewage disposal, owing to the additional expense that would be incurred in providing pumping apparatus.

BOSTON URBAN.—The closet accommodation in the town now consists of 544 privy vaults, 1901 ash closets, 851 water closets and 963 slop closets. During the year 20 privies were converted into slop closets and 1 into a water closet. 2 privies were converted into ash closets, and 4 of the latter into slop closets, and 2 privies were done away with.

SPALDING URBAN.—Present circumstances make it difficult to complete the scheme for sewage disposal.

HOLBEACH URBAN.—The street drains leading to the town sewer are often choked during heavy rains, whilst in hot weather the traps become unsealed. The dry wells frequently overflow during wet weather or when the subsoil water is at a high level, thus endangering the well or cistern water supplies. Water closets in the larger houses drain into dry wells, which are emptied periodically.

LONG SUTTON URBAN.—At the end of the year there were in the district 472 privies with fixed receptacles, 9 with moveable receptacles, 17 fresh water closets and 22 waste water and hand-flushed closets. There were no conversions from one type to another. 16 nuisances in connection with house drainage were dealt with.

SUTTON BRIDGE URBAN.—There are, in this district, 360 privies with fixed receptacles, 81 with moveable receptacles, and 10 fresh water closets. 12 privies were converted into pan closets.

BOSTON RURAL.—2 privies were converted into water closets. 46 nuisances in connection with house drainage were abated.

EAST ELLOE RURAL.—The warning, as to the danger of polluting water supplies by disposing of slop sewage to dry wells or emptying on gardens, is repeated.

CROWLAND RURAL.—A majority of the closets are privies. An attempt to substitute pails has not been altogether successful, the users not having taken enough trouble with them. There are a few water closets in the larger houses. The control of the drainage system in the district is not satisfactory, the Drainage authorities being only responsible for the removal of surface water.

POLLUTION OF STREAMS.—Nothing has been done during the year to lessen the amount of sewage that pollutes several of the water-courses in the area. The Maud Foster drain at Boston is the worst case of pollution in the County by reason of the size of the drain and of the number of inhabited houses by which it is surrounded. Surface drains at Holbeach, Long Sutton and Crowland are also polluted with a considerable quantity of domestic sewage from these places. Nothing more has been heard with regard to the pollution of the river Glen from a source outside the administrative County but, of the two

villages likely to be affected by it, Pinchbeck has now a piped water supply and Surfleet will probably have one very shortly. The tidal waters of the Witham, Welland and Nene receive, respectively, the sewage of Boston, Spalding (part of) and Sutton Bridge.

The Long Sutton Urban District Council in February raised objections to a proposal of the Spalding Urban Council, under their new sewerage scheme, to discharge an effluent in the South Holland Drain, on the ground that there would be serious contamination of the water of the drain, which is used for watering stock and possibly also for domestic purposes. Nothing further has been heard of the matter.